ATC Lab Co., Ltd

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TEST REPORT

Application No.:	ATC0904589RF
Applicant:	FUHONGXING SCIENCE AND TECHNOLOGY CO, LTD.
Address of Applicant:	Number 2,Heping Industrial Park ,Longguan Road,Sanlian village,Longhua Street,Baoan Area,Shenzhen，Guangdong
FCC ID:	XCKNB001
Fundamental Carrier Frequency :	2.412GHz to 2.462GHz
Equipment Under Test (EUT):	
Name:	Notebook computer
Model No.:	NB001
♣	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
Standards:	FCC PART 15 Subpart C: 2008
Date of Receipt:	18 April 2009
Date of Test:	20 April to 20 May 2009
Date of Issue:	22 May 2009
Test Result :	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Louis Lu
Laboratory QC Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of ATC International Electrical Approvals or testing done by ATC International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by ATC International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

1 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Conducted Emissions	FCC PART 15:2008	Section 15.207	PASS
Radiated Emission	FCC PART 15:2008	Section 15.205/15.209	PASS*
Maximum Peak Output Power	FCC PART 15 :2008	Section 15.247 (b)	PASS
Occupied Bandwidth	FCC PART 15 :2008	Section 15.247 (a2)	PASS
Edges Measurement	FCC PART 15 2008	Section 15.247(d)	PASS
Power Spectral Density Measurement	FCC PART 15 :2008	Section 15.247 (e)	PASS
Antenna requirement.	FCC PART 15:2008	Section 15.247 (b)	PASS
RF Exposure Compliance Requirement	FCC PART 15:2008	15.247(b)(4)& TCB Exclusion List (7 July 2002)	PASS

Remark:
Item No.: NB001(white), NB001(red), NB001(black), NB001(yellow);
Only the Item NB001(white) was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above items.

2 Contents

3 General Information

3.1 General Description of E.U.T.

Name:	Notebook computer
Item No.:	NB001
Frequency Range	2412MHz-2462MHz
Channel number:	11 channels
Type of modulation(802.11b):	DSSS (CCK, DQPSK, DBPSK)
Type of modulation(802.11g):	OFDM (64QAM, 16QAM, QPSK, BPSK)
Data rate(802.11b):	1/2/5.5/11Mbps
Data rate(802.11g):	6/9/12/18/24/36/48/54Mbps
Antenna Type;	Integral
Antenna Gain:	+1.30dBi

Working Frequency of Each channel:

Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
001	2412	002	2417	003	2422
004	2427	005	2432	006	2437
007	2442	008	2447	009	2452
010	2457	011	2462		

Note:

Regards to the frequency band over 10MHz, the lowest, middle and highest frequency of channel were selected to perform the test, and then shown on this report.

So the there channel as follow:

Lowest channel: 2412MHz

Middle channel: 2437MHz

Highest channel: 2462 MHz

3.2 Test Location

All tests were performed at:

25 South Ronggu Rd, Shunde, Foshan, Guandong, China

No tests were sub-contracted.

3.3 Test Facility

The test facility was recognized, certified, or accredited by the following organizations:

- **CNAL – LAB Code: L2244**

  ATC Lab Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC – Registration No.: 580210**

  ATC Lab Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC was maintained in our files.

3.4 Other Information Requested by the Customer

None

4 Test Results

4.1 Test Instruments

RE in chamber					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Due Date
GAL-EMC001	Semi-anechoic Chamber	ETS	N/A	N/A	2009-05-24
GAL-EMC003	Receiver	SCHAFFNER	SMR4503	11725	2009-07-08
GAL-EMC004	Spectrum analyzer	R&S	FSP B4	100366	2009-07-08
GAL-EMC007	Double-ridged horn (1-18GHz)	ETS	3115	6587	2010-08-02
GAL-EMC008	amplifier (0.5G-26.5G)	Agilent	83017A	MY39500438	2009-07-11
GAL-EMC017	Biconilog Antenna (26-1300MHz)	ETS	3142C	00042672	2009-09-28
GAL-EMC018	Pre-amplifier (0.1-1300MHz)	Agilent	8447D	MY3952386	2009-11-23
GAL-EMC025	Coaxial cable	ATC	NA	NA	2009-10-15
GAL-EMC027	Band filter	ASI	82346	S06389	2009-9-27

Conducted Emission					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Due Date
GAL-EMC002	Shielding Room	ETS	N/A	N/A	2009-05-30
GAL-EMC003	Receiver	SCHAFFNER	SMR4503	11725	2009-07-08
GAL-EMC005	Line impedance stabilization network	ETS	4825/2	1161	2009-07-08
GAL-EMC072	Absorbing Clamp	TESEQ	AMZ41A	22179	2008-11-30
GAL-EMC024	Coaxial cable	ATC	NA	NA	2009-10-15

4.2 E.U.T. Operation

	Model: YS06-19034D
Power supply:	Input: AC 100-240V 50/60Hz 1.5A MAX
	Output: DC 19V 3.4A
Test Voltage	AC 120V 60Hz
Operating Environment	
Temperature:	24 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
WIFI mode	Connect internet by wireless router, and keep the EUT in playing internet program.

ATC has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan under all rate at lowest channel 1 on normal condition.

Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
PK power (dBm)	8.64	9.11	9.87	10.90				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
PK power	8.70	8.91	8.85	8.71	9.26	9.12	9.05	9.33

Through Pre-scan, 11Mbps of rate is the worst case of 802.11b and 54Mbps of rate is the worst case of 802.11g were found.

Note: according to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup”.

4.3 Test Procedure & Measurement Data

4.3.1 Conducted Emissions

Test Requirement: FCC Part15 C Section 15.207

Test Method: ANSI C63.4:2003

Frequency Range: 150KHz to 30MHz

Class / Severity: Class B

Receive Detector: RBW=9KHz VBW=30KHz

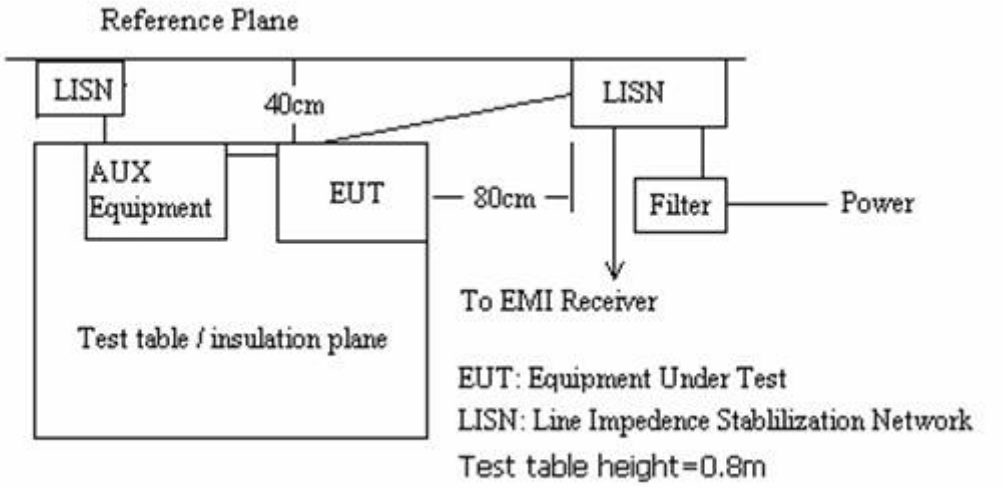
Operating Environment:

Temperature: 24 °C Humidity: 52 % RH Atmospheric Pressure: 1010 Mbar

Test mode: WIFI mode

Test procedure: Set the WIFI model, pre-scan all channels of the WIFI, and found the 801.11g mode, channel 11 which it is worse case.

Plan View of Test Setup

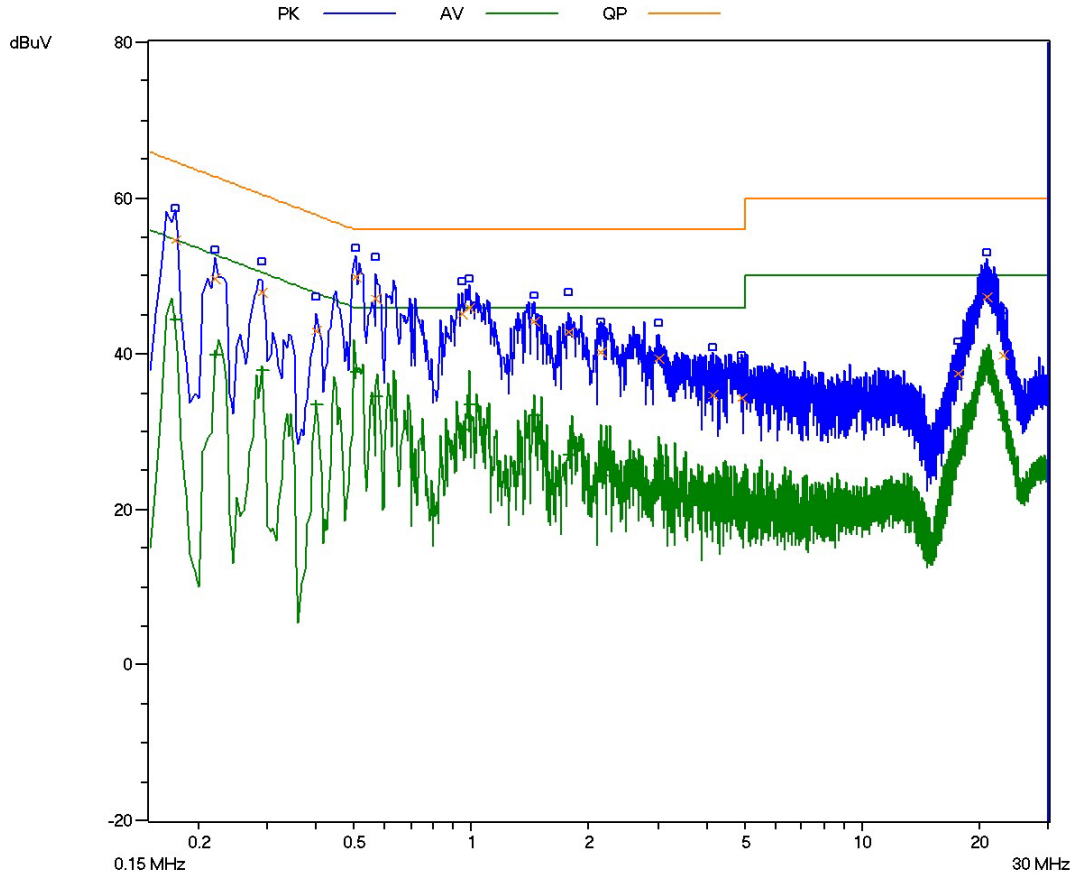


4.3.1.1 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector and average detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected. The EUT communicating with worst case mode is work-1 mode.

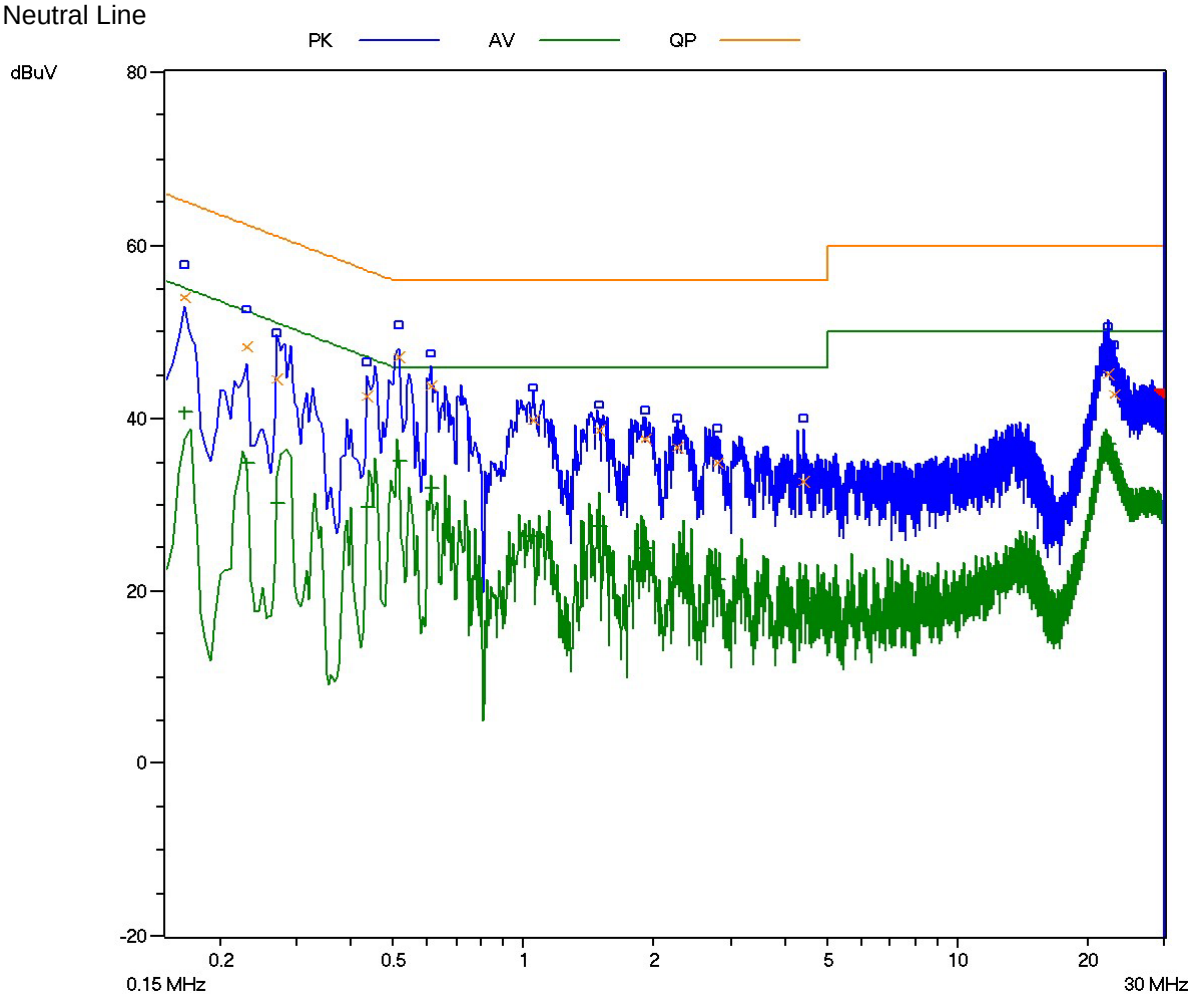
The following Quasi-Peak and Average measurements were performed on the EUT:

Live Line



Frequency (MHz)	Level PK (dBuV)	Level AV (dBuV)	Level QP (dBuV)	Limit AV (dBuV)	Limit QP (dBuV)	Over Limit AV	Over Limit QP
0.175	56.51	34.95	51.91	54.60	64.60	-19.65	-12.69
0.285	51.34	36.54	47.55	50.60	60.60	-14.06	-13.05
0.520	48.34	30.12	44.24	46.00	56.00	-15.88	-11.76
0.610	47.08	31.34	42.96	46.00	56.00	-14.66	-13.04
22.290	51.46	38.26	46.18	50.00	60.00	-11.74	-13.82
23.180	48.93	35.77	43.94	50.00	60.00	-14.23	-16.06

Neutral Line



Frequency (MHz)	Level PK (dBuV)	Level AV (dBuV)	Level QP (dBuV)	Limit AV (dBuV)	Limit QP (dBuV)	Over Limit AV	Over Limit QP
0.165	57.82	40.83	54.13	55.10	65.10	-14.27	-10.97
0.515	50.84	35.24	47.13	46.00	56.00	-10.76	-8.87
0.610	47.55	32.95	43.75	46.00	56.00	-13.05	-12.25
1.490	41.63	27.53	38.72	46.00	56.00	-18.47	-17.28
22.305	50.86	37.32	45.26	50.00	60.00	-12.68	-14.74
23.025	48.54	34.74	42.83	50.00	60.00	-15.26	-17.17

TEST RESULTS: The unit does meet the FCC requirement

FCC ID: XCKNB001

4.3.2 Radiated Emissions

Test Requirement: FCC Part15 C Section 15.247, 15.209 and 15.205

Test Method: ANSI C63.4

Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Test Range 30MHz to 25GHz

Receive setup:

Frequency (MHz)	Receive detector	RBW	VBW	Value
30-1000	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1000	Peak	1MHz	1MHz	Peak
Above 1000	Peak	1MHz	10Hz	average

15.209 Limit:

Frequency range (MHz)	Limit (dBuv/m@3m)
30-88	40.0 (QP Value)
88-216	43.5 (QP Value)
216-960	46.0 (QP Value)
960-1000	54.0(QP Value)
Above 1000	54.0 (Average Value) 74.0 (Peak Value)

Test Configuration

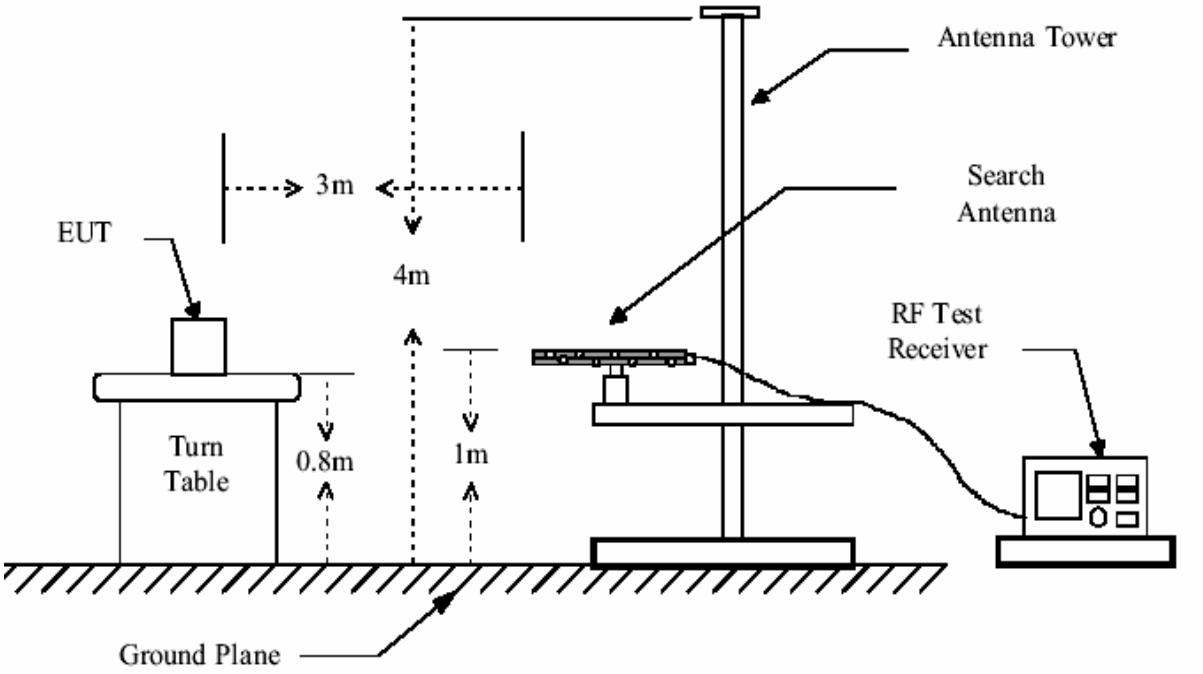


Figure1: 30MHz to 1GHz radiated emissions test configuration

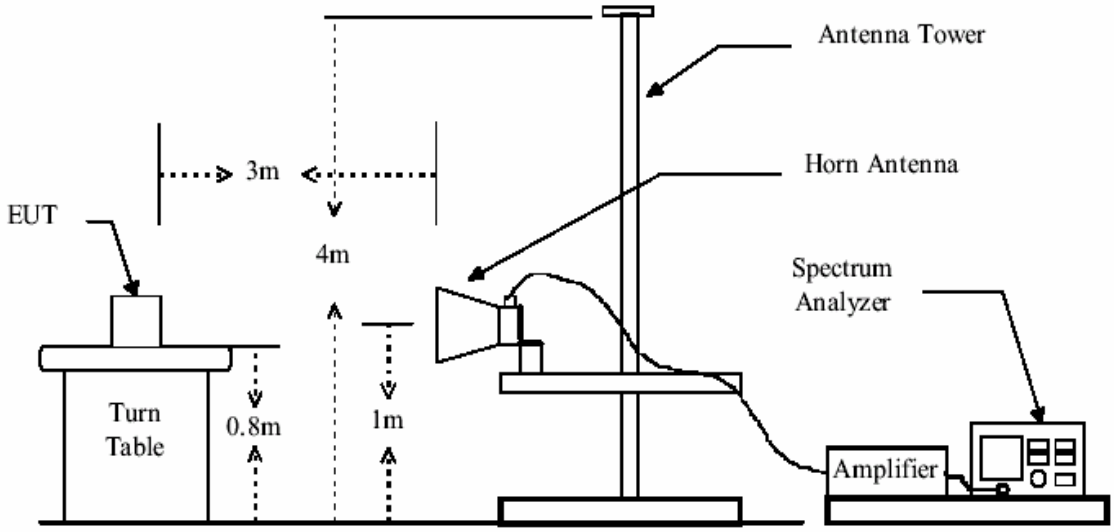


Figure 2: Above 1GHz radiated emissions test configuration

Test Procedure:

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. The EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. Connect internet by wireless router, and keep the EUT in playing internet program.
8. Set the WIFI model, pre-scan all channels of the WIFI, and found the 801.11g mode, channel 11 which it is worse case.

5.3.2.1 Radiated emission below 1GHz

Test in WIFI mode

Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
119.24	1.25	7.93	27.70	52.71	34.19	43.50	-9.31
149.31	1.32	8.91	27.46	50.22	32.99	43.50	-10.51
334.58	2.02	15.04	26.98	42.45	32.53	46.00	-13.47
498.51	2.59	17.80	27.70	41.89	34.58	46.00	-11.42
629.46	2.76	20.52	27.51	42.52	38.29	46.00	-7.71
796.30	3.19	22.08	26.95	36.85	35.17	46.00	-10.83

Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)
148.34	1.32	8.86	27.47	46.96	29.67	43.50	-13.83
206.54	1.44	10.52	27.12	44.09	28.93	43.50	-14.57
299.66	1.90	13.85	26.72	48.39	37.42	46.00	-8.58
382.11	2.15	16.08	27.30	43.71	34.64	46.00	-11.36
629.46	2.76	20.52	27.51	40.62	36.39	46.00	-9.61
797.27	3.20	22.09	26.95	37.43	35.77	46.00	-10.23

5.3.2.2 Transmitter emission above 1GHz

Pre-scan all kind of data rate, and found the worse case which it is 11Mbps of 802.11b mode and 54Mbps of 802.11g mode.

Transmitting mode (802.11b lowest channel=2412MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1479	3.75	28.23	38.56	61.32	54.74	74.00	-19.26	Vertical
2400	4.97	32.25	37.97	58.73	57.98	74.00	-16.02	Vertical
2472	5.03	32.22	38.05	55.12	54.32	74.00	-19.68	Vertical
4824	6.56	33.94	38.78	49.87	51.59	74.00	-22.41	Vertical
7236	7.75	36.54	37.59	45.58	52.28	74.00	-21.72	Vertical
9648	8.61	37.09	33.41	41.29	53.58	74.00	-20.42	Vertical
1479	3.75	28.23	38.56	60.84	54.26	74.00	-19.74	Horizontal
2400	4.97	32.25	37.97	55.39	54.64	74.00	-19.36	Horizontal
2472	5.03	32.22	38.05	54.38	53.58	74.00	-20.42	Horizontal
4824	6.56	33.94	38.78	48.77	50.49	74.00	-23.51	Horizontal
7236	7.75	36.54	37.59	44.47	51.17	74.00	-22.83	Horizontal
9648	8.61	37.09	33.41	41.29	53.58	74.00	-20.42	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit	polarization
1479	3.75	28.23	38.56	52.18	45.60	54.00	-8.40	Vertical
2400	4.97	32.25	37.97	46.28	45.53	54.00	-8.47	Vertical
2472	5.03	32.22	38.05	44.54	43.74	54.00	-10.26	Vertical
4824	6.56	33.94	38.78	42.19	43.91	54.00	-10.09	Vertical
7236	7.75	36.54	37.59	38.23	44.93	54.00	-9.07	Vertical
9648	8.61	37.09	33.41	33.38	45.67	54.00	-8.33	Vertical
1479	3.75	28.23	38.56	51.57	44.99	54.00	-9.01	Horizontal
2400	4.97	32.25	37.97	47.38	46.63	54.00	-7.37	Horizontal
2472	5.03	32.22	38.05	43.37	42.57	54.00	-11.43	Horizontal
4824	6.56	33.94	38.78	40.17	41.89	54.00	-12.11	Horizontal
7236	7.75	36.54	37.59	37.59	44.29	54.00	-9.71	Horizontal
9648	8.61	37.09	33.41	34.17	46.46	54.00	-7.54	Horizontal

Transmitting mode (802.11b middle channel=2437MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1896	4.58	32.09	38.47	59.73	57.93	74.00	-16.07	Vertical
2400	4.97	32.25	37.97	56.72	55.97	74.00	-18.03	Vertical
2480	5.08	32.28	38.25	55.28	54.39	74.00	-19.61	Vertical
2500	5.10	32.30	38.28	54.17	53.29	74.00	-20.71	Vertical
4874	6.61	34.13	38.92	50.74	52.56	74.00	-21.44	Vertical
7311	7.56	35.95	37.76	46.68	52.43	74.00	-21.57	Vertical
9748	8.70	37.11	33.44	42.14	54.51	74.00	-19.49	Vertical
1896	4.58	32.09	38.47	58.59	56.79	74.00	-17.21	Horizontal
2400	4.97	32.25	37.97	55.18	54.43	74.00	-19.57	Horizontal
2480	5.08	32.28	38.25	54.29	53.40	74.00	-20.60	Horizontal
2500	5.10	32.30	38.28	54.76	53.88	74.00	-20.12	Horizontal
4874	6.61	34.13	38.92	49.38	51.20	74.00	-22.80	Horizontal
7311	7.56	35.95	37.76	47.59	53.34	74.00	-20.66	Horizontal
9748	8.70	37.11	33.44	43.26	55.63	74.00	-18.37	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit	polarization
1896	4.58	32.09	38.47	42.17	40.37	54.00	-13.63	Vertical
2400	4.97	32.25	37.97	42.14	41.39	54.00	-12.61	Vertical
2480	5.08	32.28	38.25	42.08	41.19	54.00	-12.81	Vertical
2500	5.10	32.30	38.28	42.15	41.27	54.00	-12.73	Vertical
4874	6.61	34.13	38.92	40.21	42.03	54.00	-11.97	Vertical
7311	7.56	35.95	37.76	38.79	44.54	54.00	-9.46	Vertical
9748	8.70	37.11	33.44	33.49	45.86	54.00	-8.14	Vertical
1896	4.58	32.09	38.47	45.76	43.96	54.00	-10.04	Horizontal
2400	4.97	32.25	37.97	44.21	43.46	54.00	-10.54	Horizontal
2480	5.08	32.28	38.25	43.78	42.89	54.00	-11.11	Horizontal
2500	5.10	32.30	38.28	42.07	41.19	54.00	-12.81	Horizontal
4874	6.61	34.13	38.92	40.35	42.17	54.00	-11.83	Horizontal
7311	7.56	35.95	37.76	39.68	45.43	54.00	-8.57	Horizontal
9748	8.70	37.11	33.44	34.32	46.69	54.00	-7.31	Horizontal

Transmitting mode (802.11b highest channel=2462MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1785	4.08	29.76	38.50	60.63	55.97	74.00	-18.03	Vertical
2122	4.62	32.08	38.35	56.28	54.63	74.00	-19.37	Vertical
2472	5.03	32.22	38.05	57.49	56.69	74.00	-17.31	Vertical
2483.5	5.08	32.29	38.24	55.11	54.24	74.00	-19.76	Vertical
2495	5.09	32.51	38.42	54.57	53.75	74.00	-20.25	Vertical
4924	6.68	34.12	38.79	50.87	52.88	74.00	-21.12	Vertical
7386	7.48	35.78	37.56	48.18	53.88	74.00	-20.12	Vertical
9848	8.61	37.21	33.59	44.57	56.80	74.00	-17.20	Vertical
1785	4.08	29.76	38.50	60.13	55.47	74.00	-18.53	Horizontal
2122	4.62	32.08	38.35	58.68	57.03	74.00	-16.97	Horizontal
2472	5.03	32.22	38.05	60.15	59.35	74.00	-14.65	Horizontal
2483.5	5.08	32.29	38.24	56.48	55.61	74.00	-18.39	Horizontal
2495	5.09	32.51	38.42	54.68	53.86	74.00	-20.14	Horizontal
4924	6.68	34.12	38.79	49.45	51.46	74.00	-22.54	Horizontal
7386	7.48	35.78	37.56	47.79	53.49	74.00	-20.51	Horizontal
9848	8.61	37.21	33.59	42.74	54.97	74.00	-19.03	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit	polarization
1785	4.08	29.76	38.50	48.29	43.63	54.00	-10.37	Vertical
2122	4.62	32.08	38.35	45.18	43.53	54.00	-10.47	Vertical
2472	5.03	32.22	38.05	43.86	43.06	54.00	-10.94	Vertical
2483.5	5.08	32.29	38.24	43.19	42.32	54.00	-11.68	Vertical
2495	5.09	32.51	38.42	42.96	42.14	54.00	-11.86	Vertical
4924	6.68	34.12	38.79	40.19	42.20	54.00	-11.80	Vertical
7386	7.48	35.78	37.56	37.96	43.66	54.00	-10.34	Vertical
9848	8.61	37.21	33.59	32.15	44.38	54.00	-9.62	Vertical
1785	4.08	29.76	38.50	47.29	42.63	54.00	-11.37	Horizontal
2122	4.62	32.08	38.35	46.57	44.92	54.00	-9.08	Horizontal
2472	5.03	32.22	38.05	48.28	47.48	54.00	-6.52	Horizontal
2483.5	5.08	32.29	38.24	45.97	45.10	54.00	-8.90	Horizontal
2495	5.09	32.51	38.42	44.97	44.15	54.00	-9.85	Horizontal
4924	6.68	34.12	38.79	40.15	42.16	54.00	-11.84	Horizontal
7386	7.48	35.78	37.56	39.75	45.45	54.00	-8.55	Horizontal
9848	8.61	37.21	33.59	33.35	45.58	54.00	-8.42	Horizontal

Transmitting mode (802.11g lowest channel=2412MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1306	3.47	27.66	37.67	55.74	49.20	74.00	-24.80	Vertical
2400	4.97	32.25	37.97	53.27	52.52	74.00	-21.48	Vertical
2472	5.03	32.22	38.05	50.76	50.55	74.00	-23.45	Vertical
4825	6.62	34.03	38.91	47.22	48.96	74.00	-25.04	Vertical
7273	7.61	36.21	37.71	46.54	52.65	74.00	-21.35	Vertical
9534	8.46	36.92	33.87	41.97	53.48	74.00	-20.52	Vertical
1578	3.86	28.56	38.07	58.69	53.04	74.00	-20.96	Horizontal
2400	4.97	32.25	37.97	55.34	54.59	74.00	-19.41	Horizontal
2472	5.03	32.22	38.05	51.98	51.18	74.00	-22.82	Horizontal
4842	6.62	34.03	38.89	47.11	48.87	74.00	-25.13	Horizontal
7222	7.63	36.29	37.72	46.78	52.98	74.00	-21.02	Horizontal
9653	8.55	37.01	33.66	40.26	52.16	74.00	-21.84	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit (dB)	polarization
1306	3.47	27.66	37.67	49.82	43.28	54.00	-10.72	Vertical
2400	4.97	32.25	37.97	40.59	39.84	54.00	-14.16	Vertical
2472	5.03	32.22	38.05	43.98	43.18	54.00	-10.82	Vertical
4825	6.62	34.03	38.91	40.18	41.92	54.00	-12.08	Vertical
7273	7.61	36.21	37.71	39.71	45.82	54.00	-8.18	Vertical
9534	8.46	36.92	33.87	35.10	46.61	54.00	-7.39	Vertical
1578	3.86	28.56	38.07	49.68	44.03	54.00	-9.97	Horizontal
2400	4.97	32.25	37.97	46.65	45.90	54.00	-8.10	Horizontal
2472	5.03	32.22	38.05	43.49	42.69	54.00	-11.31	Horizontal
4842	6.62	34.03	38.89	40.21	41.97	54.00	-12.03	Horizontal
7222	7.63	36.29	37.72	39.76	45.96	54.00	-8.04	Horizontal
9653	8.55	37.01	33.66	34.28	46.18	54.00	-7.82	Horizontal

Transmitting mode (802.11g middle channel=2437MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1896	4.58	32.09	38.47	59.06	57.26	74.00	-16.74	Vertical
2400	4.97	32.25	37.97	56.37	55.62	74.00	-18.38	Vertical
2480	5.08	32.28	38.25	54.54	53.65	74.00	-20.35	Vertical
2500	5.10	32.30	38.28	51.71	50.83	74.00	-23.17	Vertical
4893	6.65	34.02	38.87	44.78	46.58	74.00	-27.42	Vertical
7443	7.52	35.91	37.55	43.15	49.03	74.00	-24.97	Vertical
9806	8.68	37.14	33.40	40.47	52.89	74.00	-21.11	Vertical
1896	4.58	32.09	38.47	58.78	56.98	74.00	-17.02	Horizontal
2400	4.97	32.25	37.97	50.74	49.99	74.00	-24.01	Horizontal
2480	5.08	32.28	38.25	53.64	52.75	74.00	-21.25	Horizontal
2500	5.10	32.30	38.28	51.77	50.89	74.00	-23.11	Horizontal
4876	6.64	34.02	38.88	47.36	49.14	74.00	-24.86	Horizontal
7443	7.52	35.91	37.55	44.73	50.61	74.00	-23.39	Horizontal
9891	8.75	37.21	33.38	39.83	52.41	74.00	-21.59	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit (dB)	polarization
1896	4.58	32.09	38.47	44.37	42.57	54.00	-11.43	Vertical
2400	4.97	32.25	37.97	41.59	40.84	54.00	-13.16	Vertical
2480	5.08	32.28	38.25	41.53	40.64	54.00	-13.36	Vertical
2500	5.10	32.30	38.28	43.28	42.40	54.00	-11.60	Vertical
4893	6.65	34.02	38.87	40.10	41.90	54.00	-12.10	Vertical
7443	7.52	35.91	37.55	39.64	45.52	54.00	-8.48	Vertical
9806	8.68	37.14	33.40	35.21	47.63	54.00	-6.37	Vertical
1896	4.58	32.09	38.47	45.34	43.54	54.00	-10.46	Horizontal
2400	4.97	32.25	37.97	40.21	39.46	54.00	-14.54	Horizontal
2480	5.08	32.28	38.25	40.54	39.65	54.00	-14.35	Horizontal
2500	5.10	32.30	38.28	41.86	40.98	54.00	-13.02	Horizontal
4876	6.64	34.02	38.88	40.18	41.96	54.00	-12.04	Horizontal
7443	7.52	35.91	37.55	38.67	44.55	54.00	-9.45	Horizontal
9891	8.75	37.21	33.38	34.96	47.54	54.00	-6.46	Horizontal

Transmitting mode (802.11g highest channel=2462MHz)

Peak Measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1306	3.47	27.66	37.67	57.88	51.34	74.00	-22.66	Vertical
2472	5.03	32.22	38.05	56.74	55.94	74.00	-18.06	Vertical
2483.5	5.08	32.29	38.24	55.41	54.54	74.00	-19.46	Vertical
2495	5.09	32.51	38.42	53.18	52.36	74.00	-21.64	Vertical
4876	6.64	34.02	38.88	44.80	46.58	74.00	-27.42	Vertical
7545	7.54	35.82	37.45	43.74	49.65	74.00	-24.35	Vertical
9772	8.65	37.12	33.45	40.94	53.26	74.00	-20.74	Vertical
2122	4.62	32.08	38.35	55.27	53.62	74.00	-20.38	Horizontal
2472	5.03	32.22	38.05	54.34	53.54	74.00	-20.46	Horizontal
2484	5.08	32.29	38.24	53.61	52.74	74.00	-21.26	Horizontal
2495	5.09	32.51	38.42	53.78	52.96	74.00	-21.04	Horizontal
4944	6.67	34.01	38.85	47.54	49.37	74.00	-24.63	Horizontal
7443	7.52	35.91	37.55	45.53	51.41	74.00	-22.59	Horizontal
9772	8.65	37.12	33.45	41.48	53.80	74.00	-20.20	Horizontal

Average Measurement

Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Over limit (dB)	polarization
1306	3.47	27.66	37.67	48.58	42.04	54.00	-11.96	Vertical
2472	5.03	32.22	38.05	46.43	45.63	54.00	-8.37	Vertical
2483.5	5.08	32.29	38.24	45.69	44.82	54.00	-9.18	Vertical
2495	5.09	32.51	38.42	44.97	44.15	54.00	-9.85	Vertical
4876	6.64	34.02	38.88	40.16	41.94	54.00	-12.06	Vertical
7545	7.54	35.82	37.45	39.68	45.59	54.00	-8.41	Vertical
9772	8.65	37.12	33.45	35.59	47.91	54.00	-6.09	Vertical
2122	4.62	32.08	38.35	48.68	47.03	54.00	-6.97	Horizontal
2472	5.03	32.22	38.05	47.43	46.63	54.00	-7.37	Horizontal
2484	5.08	32.29	38.24	45.27	44.40	54.00	-9.60	Horizontal
2495	5.09	32.51	38.42	44.73	43.91	54.00	-10.09	Horizontal
4944	6.67	34.01	38.85	39.86	41.69	54.00	-12.31	Horizontal
7443	7.52	35.91	37.55	38.49	44.37	54.00	-9.63	Horizontal
9772	8.65	37.12	33.45	35.56	47.88	54.00	-6.12	Horizontal

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Preamplifier Factor.

Remark: No any other emissions level which are attenuated less than 20dB below the limit

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.

Remark:

1). As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

2). The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

3) Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates and antenna ports, and found the EUT worse case mode: 802.11b (11MHz), 802.11g (54MHz)

4）For this intentional radiator operates below 25 GHz. The spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the 4th harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 4th harmonic.

Remark:

Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 - 13.41	322 - 335.4		

TEST RESULTS: The unit does meet the FCC requirements.

4.3.3 Occupied Bandwidth

Test Requirement:	FCC 15.247(a2)
Test Method:	ANSI C63.4:2003 and KDB558074
Select test data rate:	11Mbps(802.11 b) & 54Mbps(802.11g)
Requirements:	15.247 (a2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel was (were) selected for the final test as listed below.
802.11b 11Mbps and 802.11g 54Mbps

Equipment Mode	Spectrum Analyzer
Detector Function	Peak
RBW	100KHz
VBW	300KHz

Method of measurement:
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB. Analyzer and the attached plot were taken. The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance with FCC 47CFR 15.247 requirements.

Test results:

1. The EUT communicating with 802.11b Mode

CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
2.412	10.00	0.5	Pass
2.437	10.24	0.5	Pass
2.462	10.20	0.5	Pass

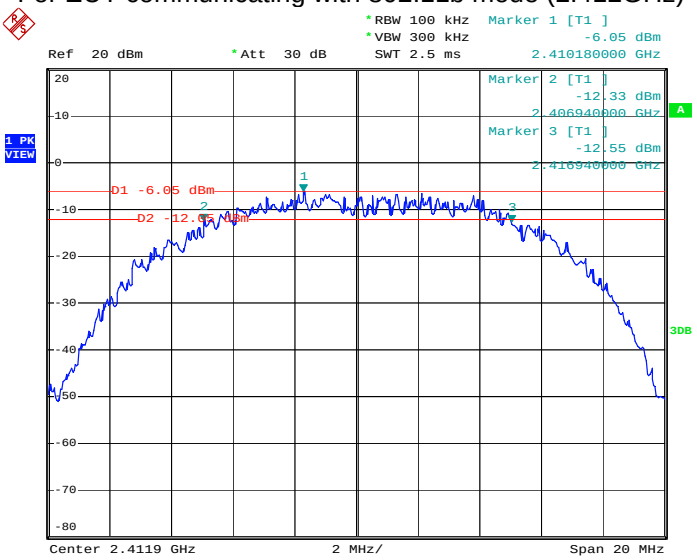
2. The EUT communicating with 802.11g Mode

CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
2.412	16.52	0.5	Pass
2.437	16.52	0.5	Pass
2.462	16.52	0.5	Pass

Conclusion: The unit does meet the FCC requirements.

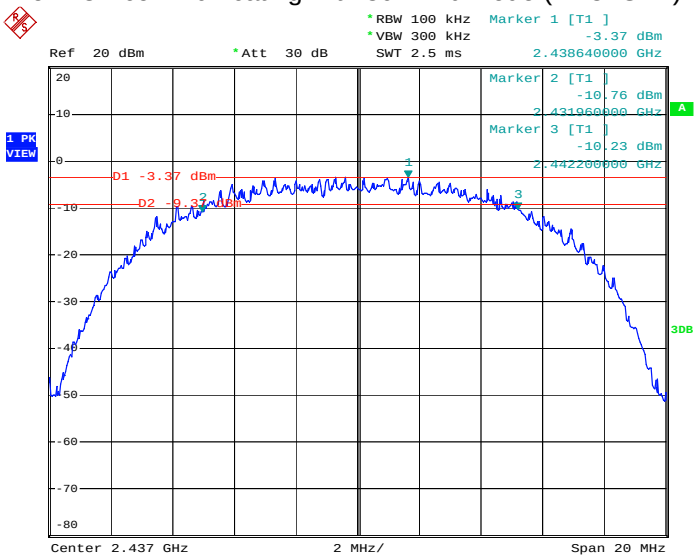
Please refer to the graph as below:

1. For EUT communicating with 802.11b mode (2.412GHz)



Date: 22.MAY.2009 12:53:18

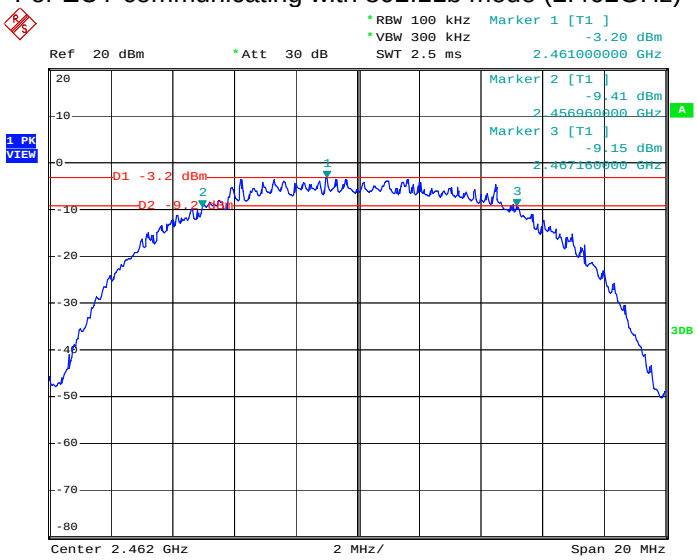
2. For EUT communicating with 802.11b mode (2.437GHz)



Date: 22.MAY.2009 12:31:14

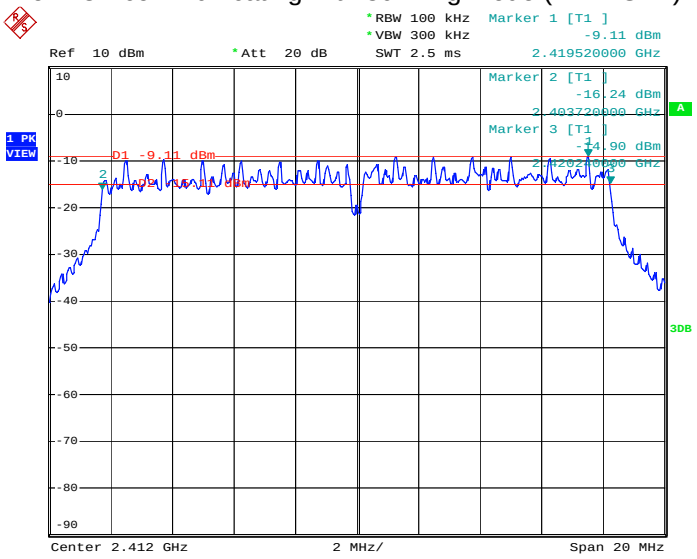
FCC ID: XCKNB001

3. For EUT communicating with 802.11b mode (2.462GHz)



Date: 22.MAY.2009 13:15:02

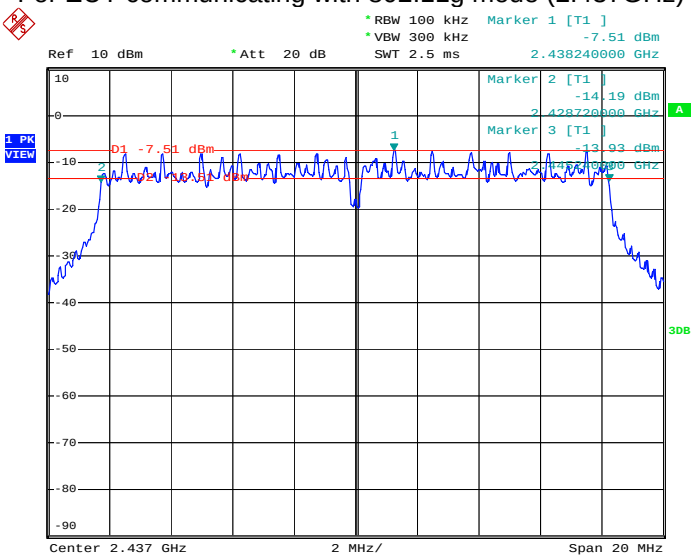
4. For EUT communicating with 802.11g mode (2.412GHz)



Date: 26.APR.2009 15:22:35

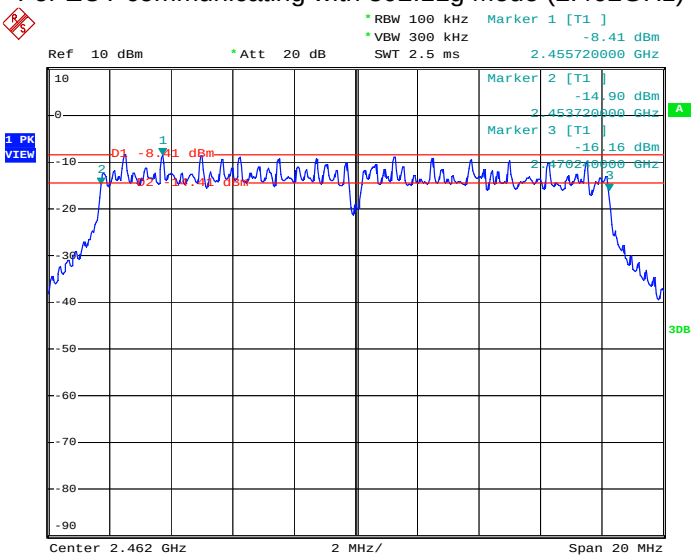
FCC ID: XCKNB001

5. For EUT communicating with 802.11g mode (2.437GHz)



Date: 26.APR.2009 15:39:37

6. For EUT communicating with 802.11g Mode (2.462GHz)



Date: 26.APR.2009 15:59:21

FCC ID: XCKNB001

4.3.4 Maximum Peak Output Power

Test Requirement: FCC 15.247(b)

Test Method: ANSI C63.4:2003 and KDB558074.

Method of measurement: The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Select test data rate: 11Mbps(802.11b) & 54Mbps(802.11g)

Equipment Mode	Spectrum Analyzer
Detector Function	Peak
RBW	1MHz
VBW	1MHz

Test Procedure:

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

802.11b 11Mbps and 802.11g 54Mbps.

Requirements:

Regulation 15.247 (b) The Limit of Maximum Peak Output Power Measurement is 30dBm.

Test Result:

For EUT communicating with 802.11b Mode

Channel (GHz)	Peak Output Power (dBm)	Cable loss (dB)	Power level(dBm)	Limit (dBm)	Margin (dB)
2.412	10.90	0.50	11.40	30.00	18.60
2.437	11.77	0.50	12.27	30.00	17.73
2.462	11.85	0.50	12.35	30.00	17.65

For EUT communicating with 802.11g Mode

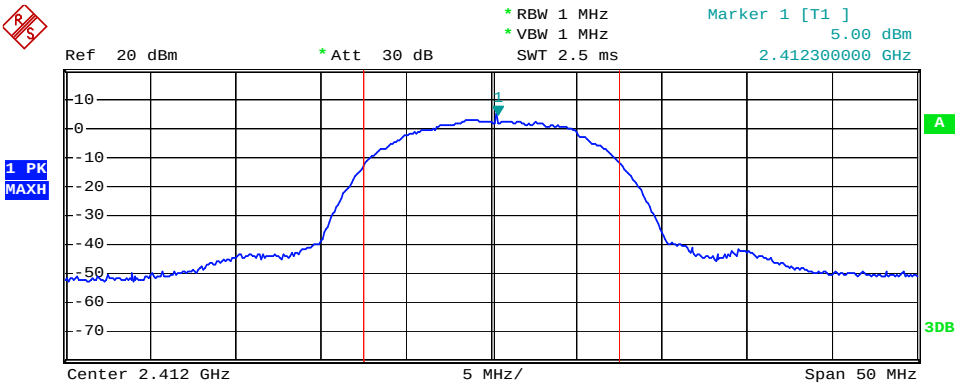
Channel (GHz)	Peak Output Power (dBm)	Cable loss (dB)	Power level(dBm)	Limit (dBm)	Margin (dB)
2.412	9.33	0.50	9.83	30.00	20.17
2.437	10.31	0.50	10.81	30.00	19.19
2.462	9.84	0.50	10.34	30.00	19.66

Test result: The unit does meet the FCC requirements.

Test result plot as follows:

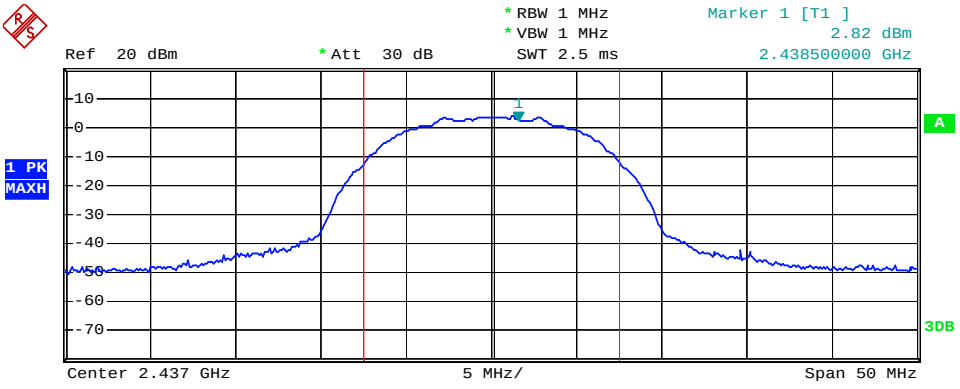
The EUT communicating with 802.11b Mode

Lowest channel=2412MHz



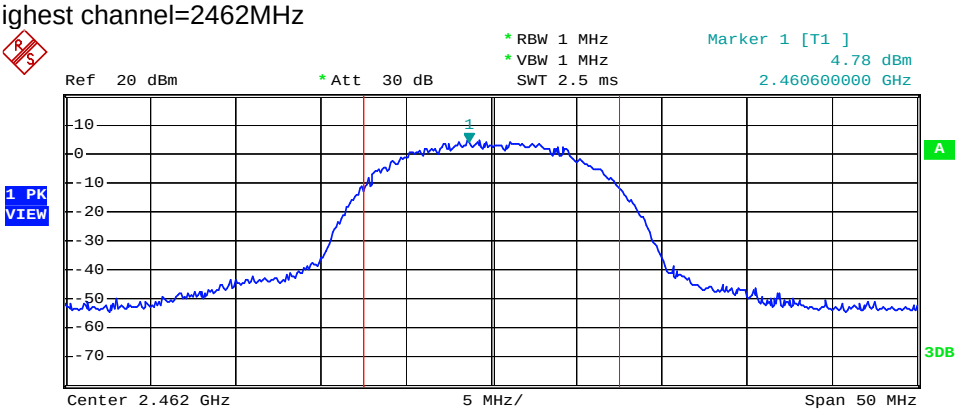
Tx Channel
Bandwidth 15 MHz Power 10.90 dBm

Middle channel=2437MHz



Tx Channel
Bandwidth 15 MHz Power 11.77 dBm

Highest channel=2462MHz

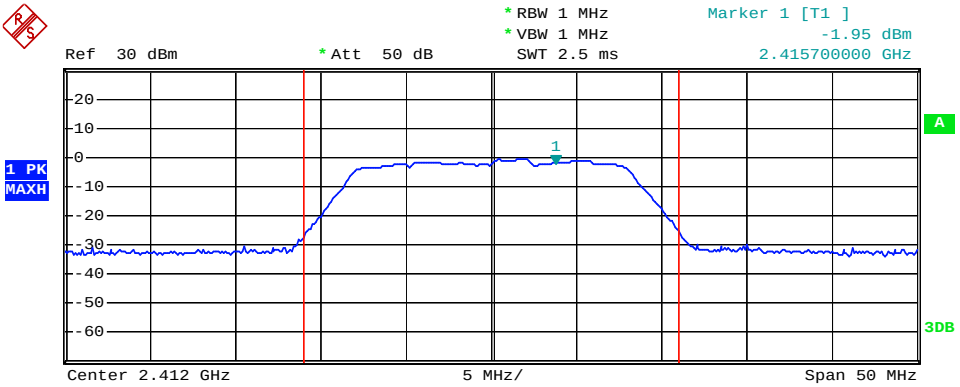


Tx Channel
Bandwidth 15 MHz Power 11.85 dBm

FCC ID: XCKNB001

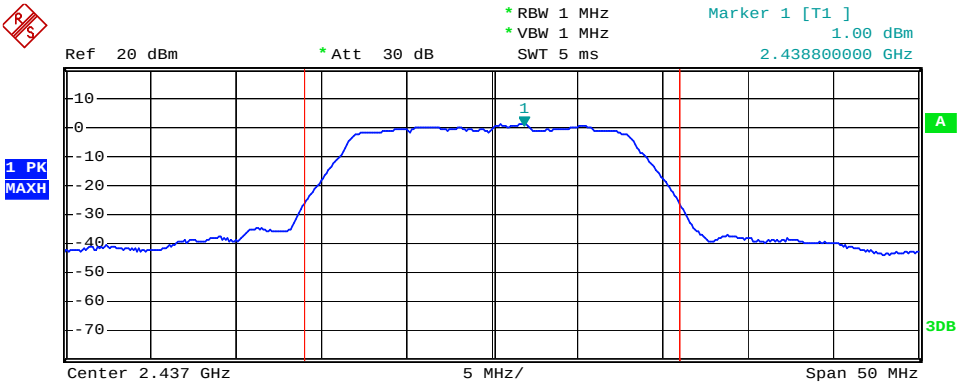
The EUT communicating with 802.11g Mode

Lowest channel=2412MHz



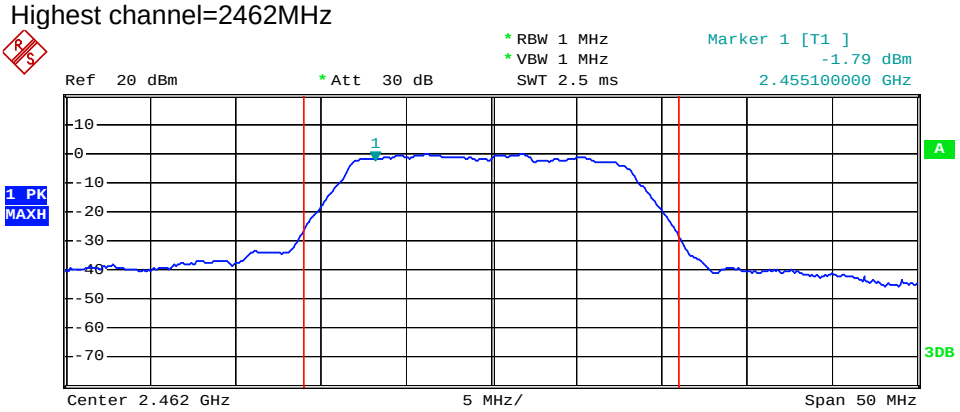
Tx Channel
Bandwidth 22 MHz Power 9.33 dBm

Middle channel=2437MHz



Tx Channel
Bandwidth 22 MHz Power 10.81 dBm

Highest channel=2462MHz



Tx Channel
Bandwidth 22 MHz Power 9.84 dBm

Conclusion: The EUT meets the requirements of this section.

4.3.5 Band Edges Measurement

Test Requirement: FCC Part15 C Section 15.247(d)

Test Method: ANSI C63.4; FCC Part15 C Section 15.247:
KDB Publication No. 558074 for DSS

Select test mode: 802.11 b 11Mbps & 802.11g 54Mbps

Requirements:

Regulation 15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Test Procedures:

Procedure: The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

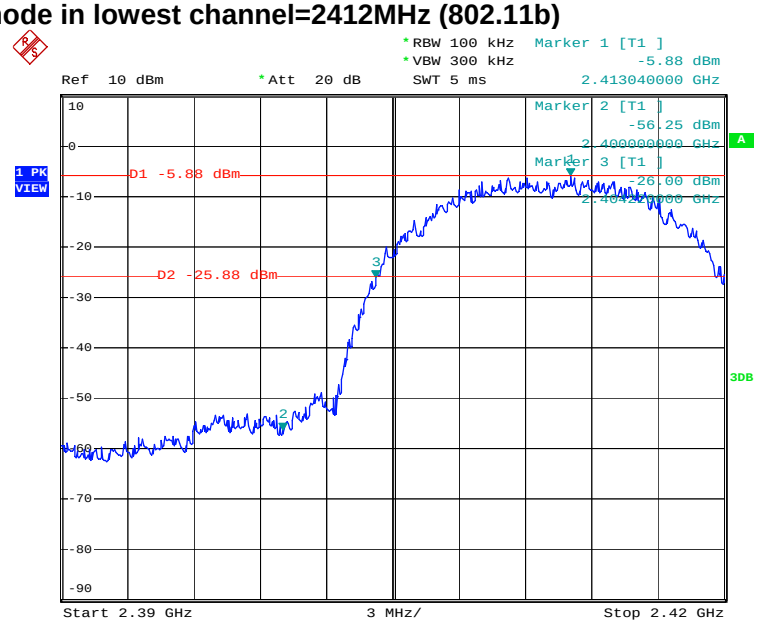
Equipment Mode	Spectrum Analyzer
Detector Function	Peak Mode
RBW	100KHz
VBW	300KHz

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
802.11b 11Mbps and 802.11g 54Mbps

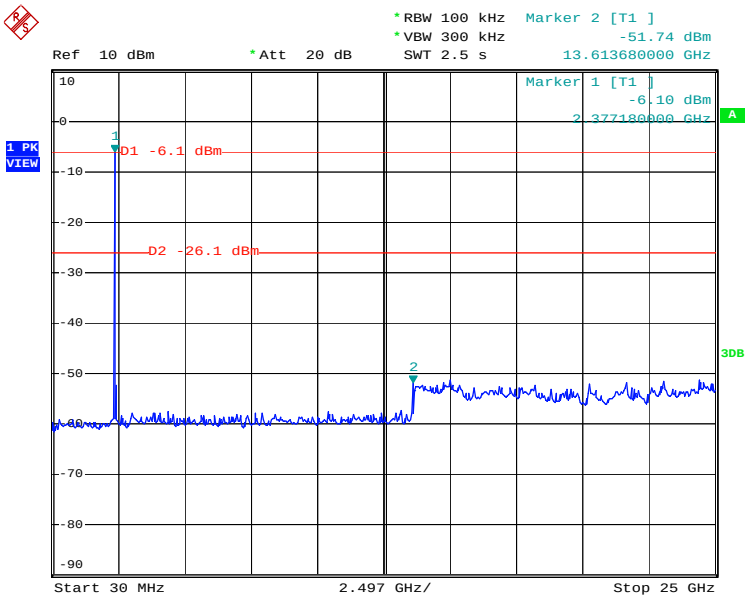
Test Result:

Please refer to the measurement graph and data.

Transmitting mode in lowest channel=2412MHz (802.11b)



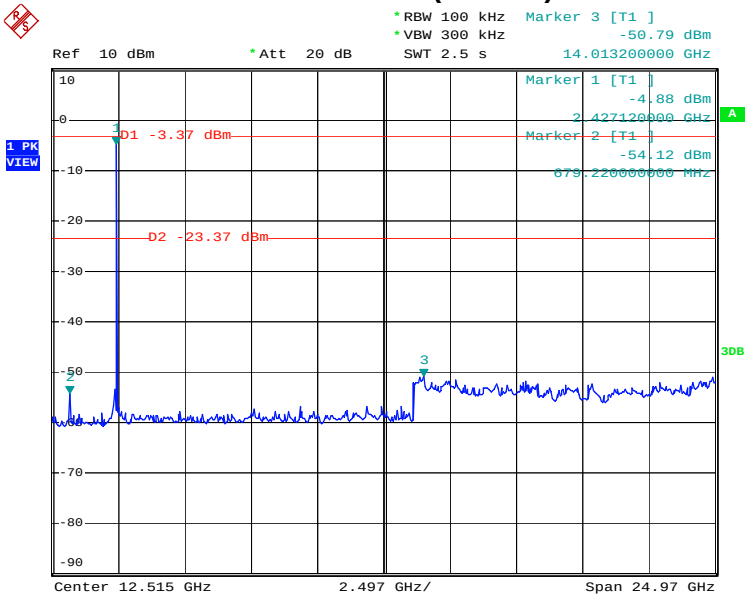
Date: 22.MAY.2009 13:06:32



Date: 22.MAY.2009 13:07:35

FCC ID: XCKNB001

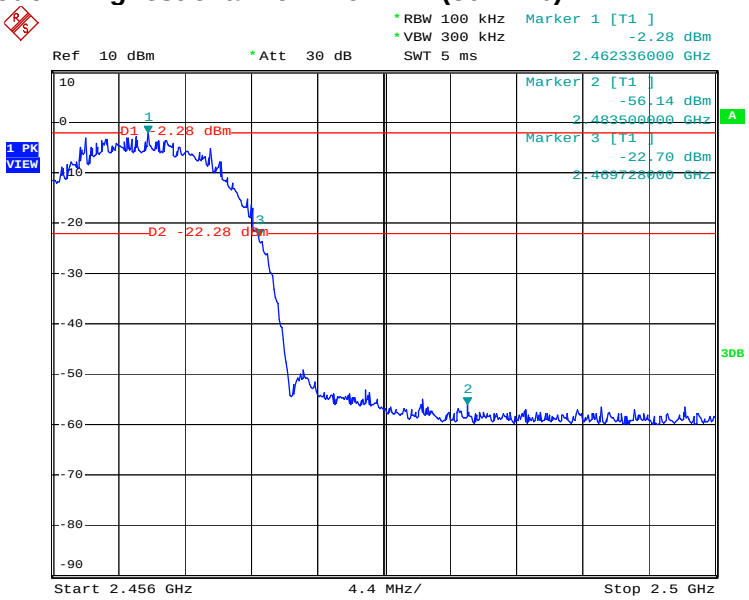
Transmitting mode in middle channel=2437MHz (802.11b)



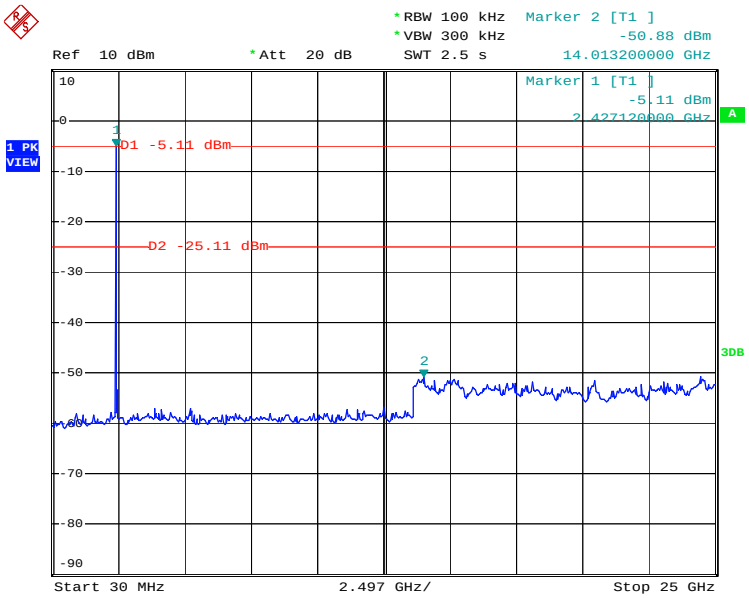
Date: 22.MAY.2009 12:33:10

FCC ID: XCKNB001

Transmitting mode in highest channel=2462MHz (802.11b)



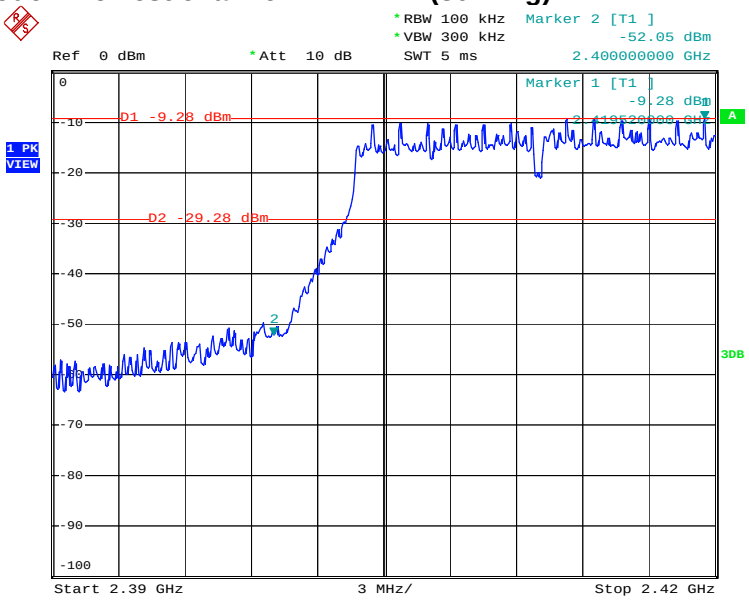
Date: 22.MAY.2009 13:16:25



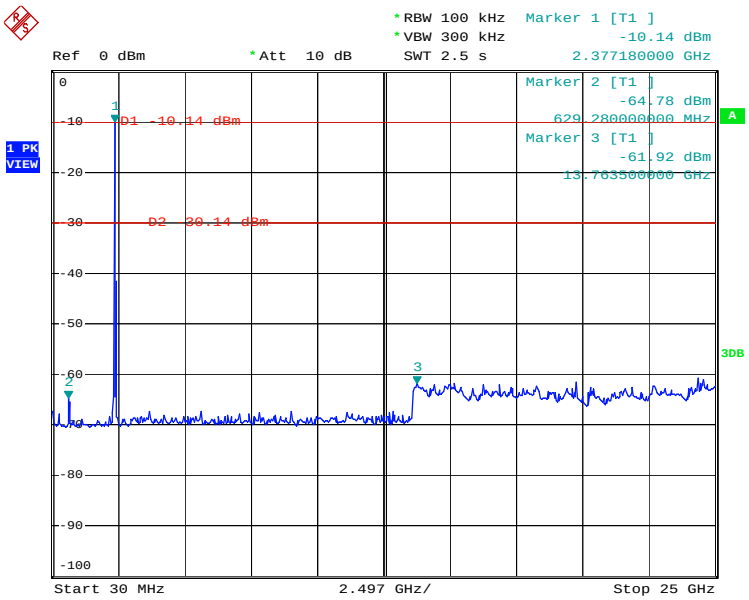
Date: 22.MAY.2009 13:28:30

FCC ID: XCKNB001

Transmitting mode in lowest channel=2412MHz (802.11g)



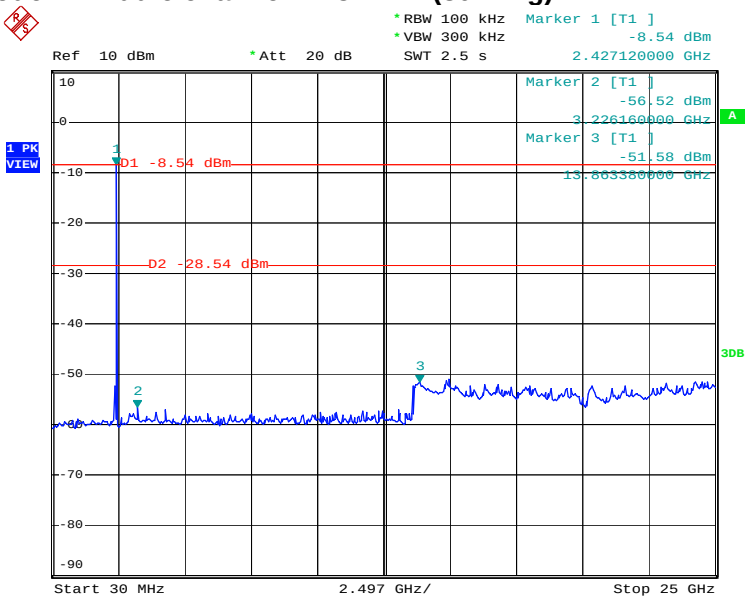
Date: 26.APR.2009 15:24:15



Date: 26.APR.2009 15:26:12

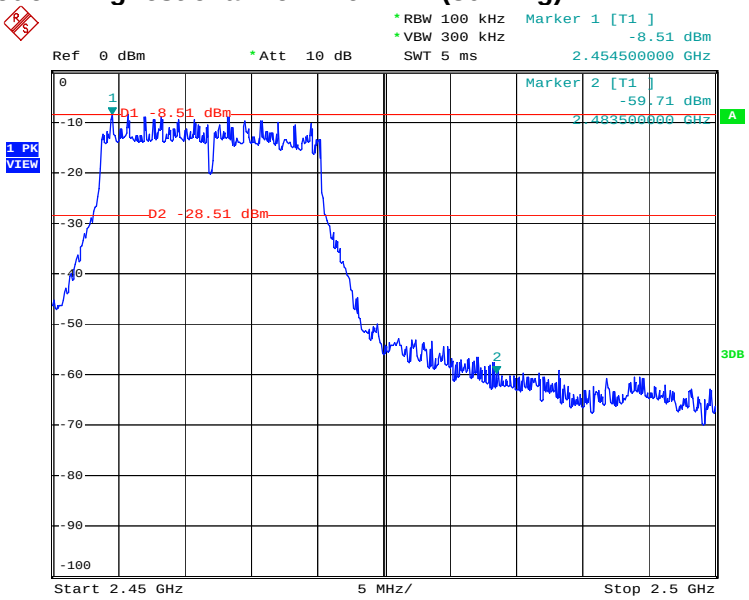
FCC ID: XCKNB001

Transmitting mode in middle channel=2437MHz (802.11g)

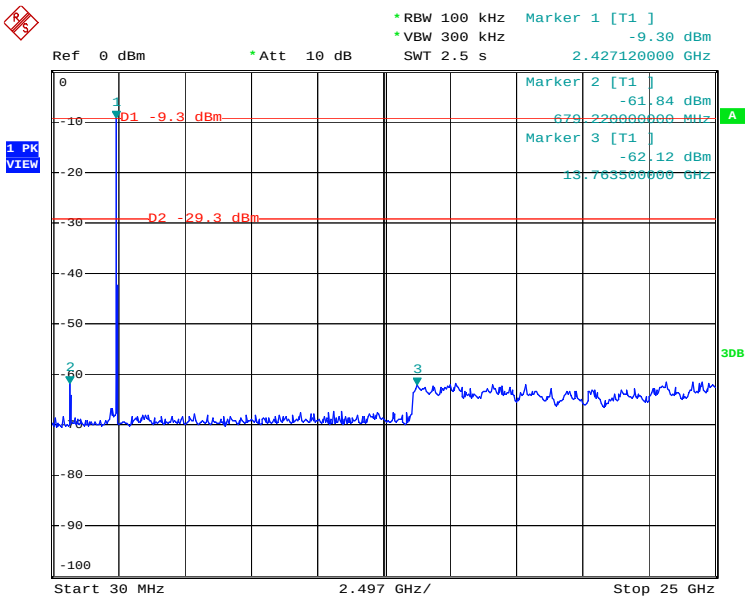


Date: 26.APR.2009 15:41:21

Transmitting mode in highest channel=2462MHz (802.11g)



Date: 26.APR.2009 16:01:20



Date: 26.APR.2009 16:02:59

FCC ID: XCKNB001

4.3.6 Power Spectral Density Measurement

Test Requirement: FCC 15.247(d)

Test Method: ANSI C63.4 and KDB Publication No. 558074 for DSS.

Regulation 15.247 (d) for direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm
in any 3 kHz band during any time interval of continuous transmission

Test Procedures:

Equipment Mode	Spectrum Analyzer
Detector Function	Peak
RBW	3KHz
VBW	10KHz
Span	300KHz
Sweep Time	100S

Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates (802.11b 1/2/5.5/11Mbps and 802.11g 6/9/12/18/24/36/48/54Mbps) and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
802.11b 11Mbps and 802.11g 54Mbps

The EUT was set transmitting continuously and force selection of output power level and channel number. We'd observed that the peak levels aren't greater than +8dBm limit.

The EUT was setup to ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Test Result:

1. For EUT communicating with 802.11b Mode

Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable loss (dB)	Power Spectral Density level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-18.22	0.50	-17.72	8.00	25.72
2437	-14.95	0.50	-14.45	8.00	22.45
2462	-15.49	0.50	-14.99	8.00	22.99

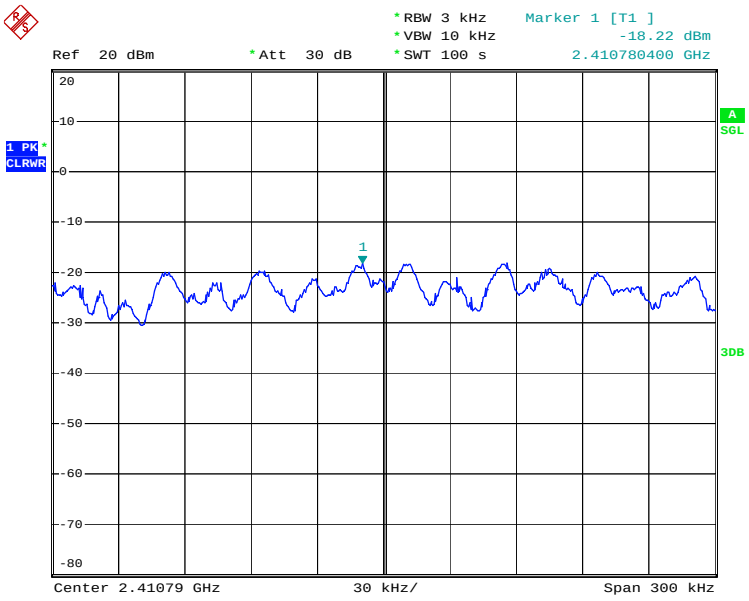
2. For EUT communicating with 802.11g Mode

Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable loss (dB)	Power Spectral Density level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-21.23	0.50	-20.73	8.00	-28.73
2437	-19.73	0.50	-19.23	8.00	-27.23
2462	-18.23	0.50	-17.73	8.00	-25.73

Conclusion:
The EUT meets the requirements of this section.
Please refer to the graph and data as below:

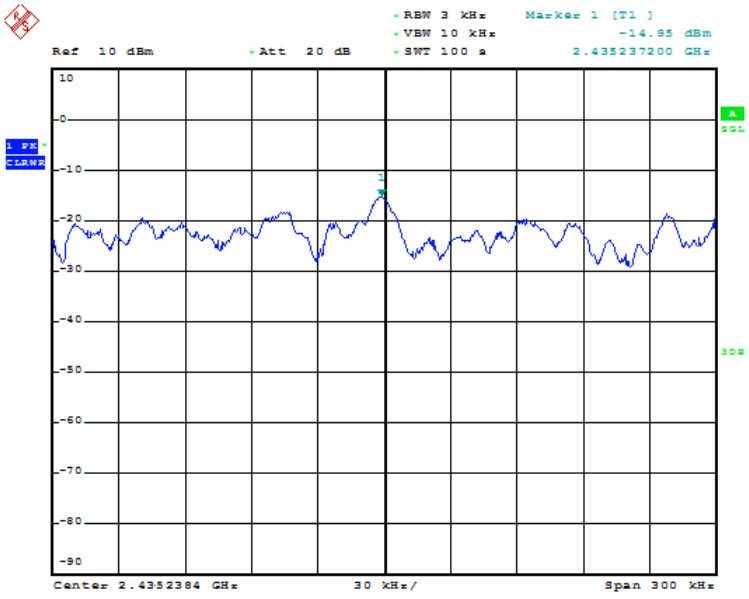
802.11b mode:

Lowest channel=2412MHz



Date: 22.MAY.2009 13:04:03

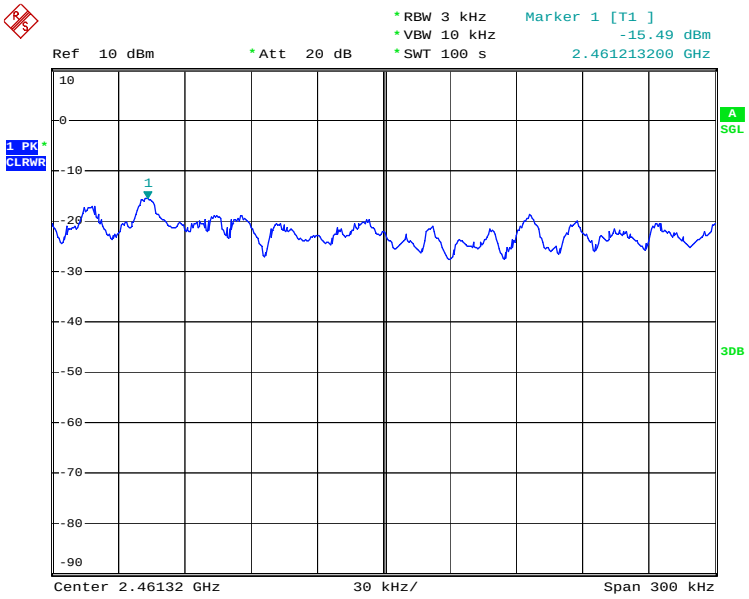
Middle channel=2437MHz



Date: 22.MAY.2009 10:29:58

FCC ID: XCKNB001

Highest channel=2462MHz

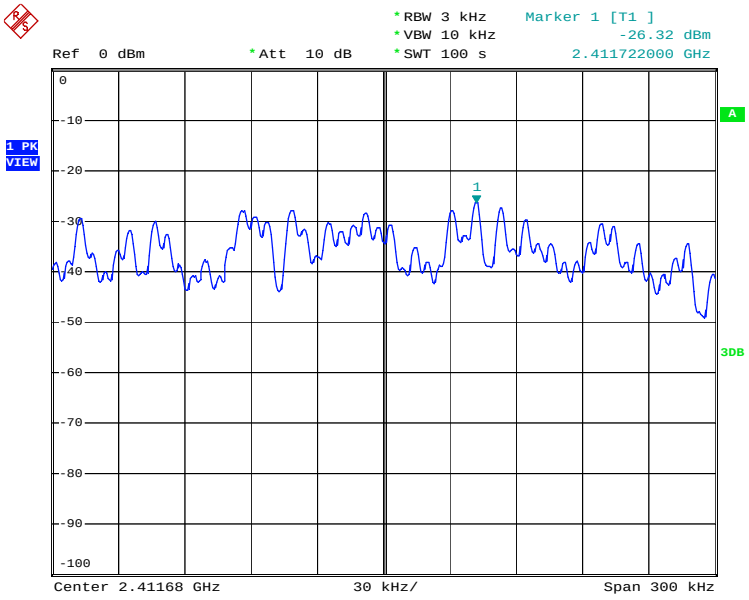


Date: 22.MAY.2009 13:33:03

FCC ID: XCKNB001

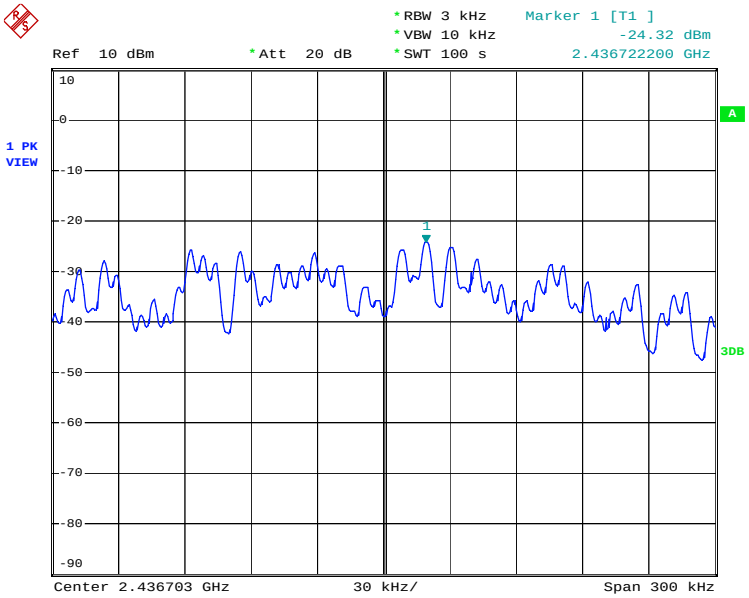
802.11g mode:

Lowest channel=2412MHz



Date: 26.APR.2009 15:32:51

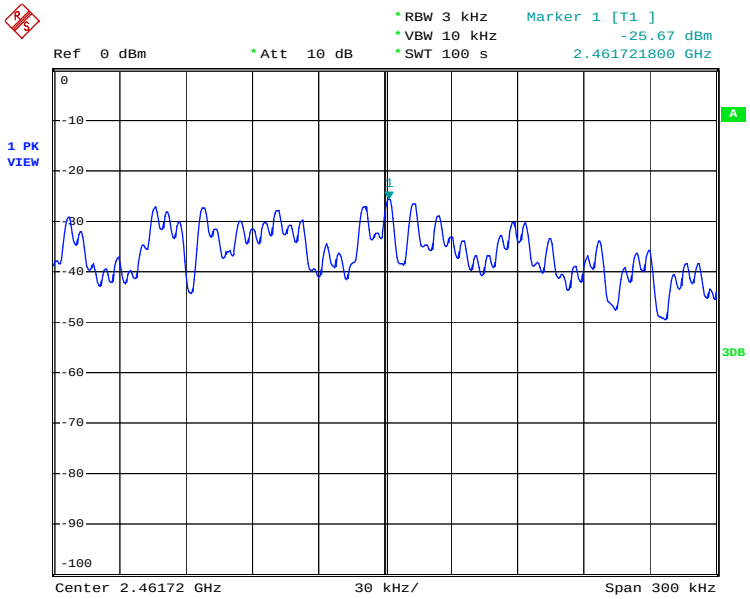
Middle channel=2437MHz



Date: 26.APR.2009 15:52:51

FCC ID: XCKNB001

Highest channel=2462MHz



Date: 26.APR.2009 16:09:24

FCC ID: XCKNB001

4.3.7 Antenna Requirement

Standard requirement

15.203 requirement:

For intentional device. According to 15.203. an intentional radiator shall be designed to Ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz bands that are used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna

The best case gain of the antenna is 1.30dBi.

4.3.8 RF Exposure Compliance Requirement

Standard requirement

15.247(b)(4) requirement:
(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section. if transmitting antennas of directional gain greater than 6 dBi are used. the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1). (b)(2). and (b)(3) of this section. as appropriate. by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT RF Exposure

The Max Conducted Peak Output Power is **12.35dBm(17.18mW)** in the Midddle channel (2.462GHz);
The best case gain of the antenna is 1.30dBi.
1.30dB logarithmic terms convert to numeric result is nearly 1.35
According to the formula. calculate the EIRP test result:

EIRP= P x G = 17.18 mW x 1.35 = 23.20mW ①
SAR requirement:
S= 60 / f(GHz) = 60/2.437 = 24.62 mW ② ;
① < ②.
So the SAR report is not required.